

CLAIMS

1. A vault shaped sputtering target, comprising:

a principal target comprising a material to be sputtered in opposition to a substrate to be sputter deposited and including a cylindrically shaped sidewall and a disk shaped roof forming therebetween a cylindrical vault generally symmetric about a central axis and facing said substrate;

5 magnetic means positioned outside of said cylindrically shaped sidewall and extending around said central axis but not extending above a back of said roof; and

10 a magnetron positioned in back of said disk shaped roof and rotatable about said central axis.

2. The target of claim 1, wherein said magnetron comprises a first magnet assembly of a first magnetic polarity along said central axis and a second magnet assembly of a second magnetic polarity opposite said first magnetic polarity and surrounding said first magnet assembly.

15 3. The target of claim 2, wherein said magnetic means comprising a plurality of magnets arranged around an exterior of said sidewall and having said second magnetic polarity.

4. The target of claim 1, wherein said magnetic means have a magnetic polarity extending along said central axis.

20 5. The target of claim 1, wherein said magnetic means comprise horizontally arranged magnets.

6. The target of claim 1, wherein said magnetic means comprises a plurality of permanent magnets arranged in a circle about said central axis.

7. The target of claim 1, further comprising a plate comprising said material and partially closing a throat of said cylindrical vault opposite said roof.

8. A sputtering reactor, comprising:

a vacuum chamber arranged about said central axis and sealed at one end by the target

5 of claim 1; and

a pedestal within said vacuum chamber for supporting a substrate in opposition to said target to be sputter deposited with said material.

a pedestal for supporting a substrate in o